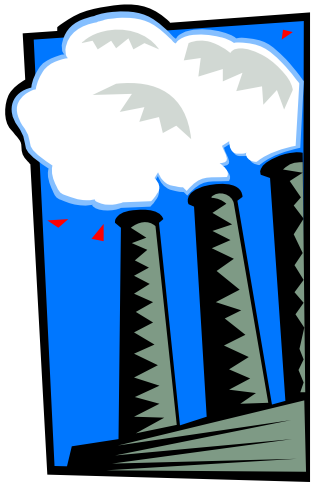
Stationary Combustion Sources

Recommendations for Further Consideration



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Workgroup Leader

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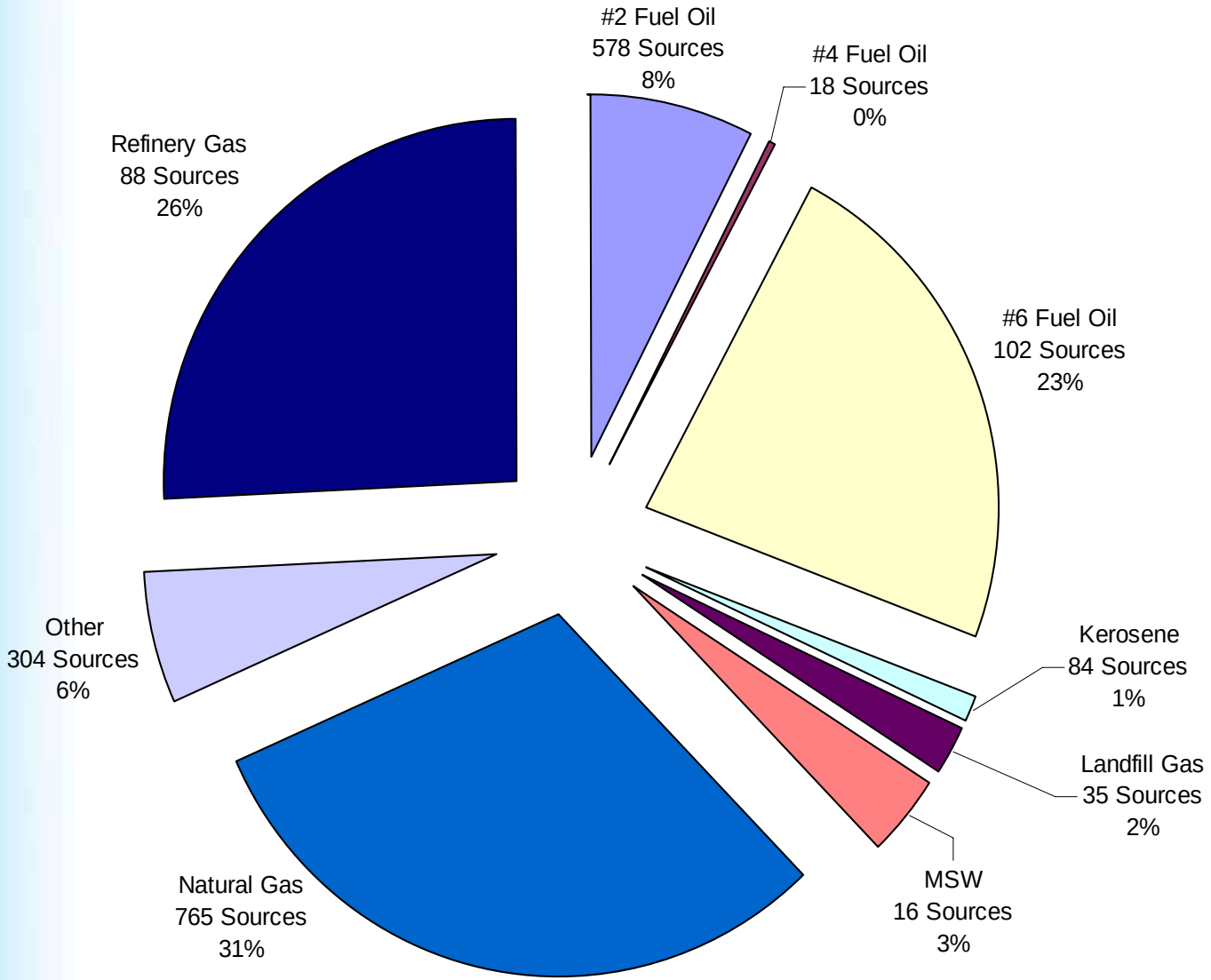
Purpose and Goals

- To identify potential strategies to reduce emissions of sulfur dioxide (SO_2), oxides of nitrogen (NO_x), fine particle matter ($PM_{2.5}$), and volatile organic compounds (VOC)
- To identify viable methods to reduce emissions from stationary combustion sources for possible inclusion into the New Jersey's State Implementation Plans (SIP)

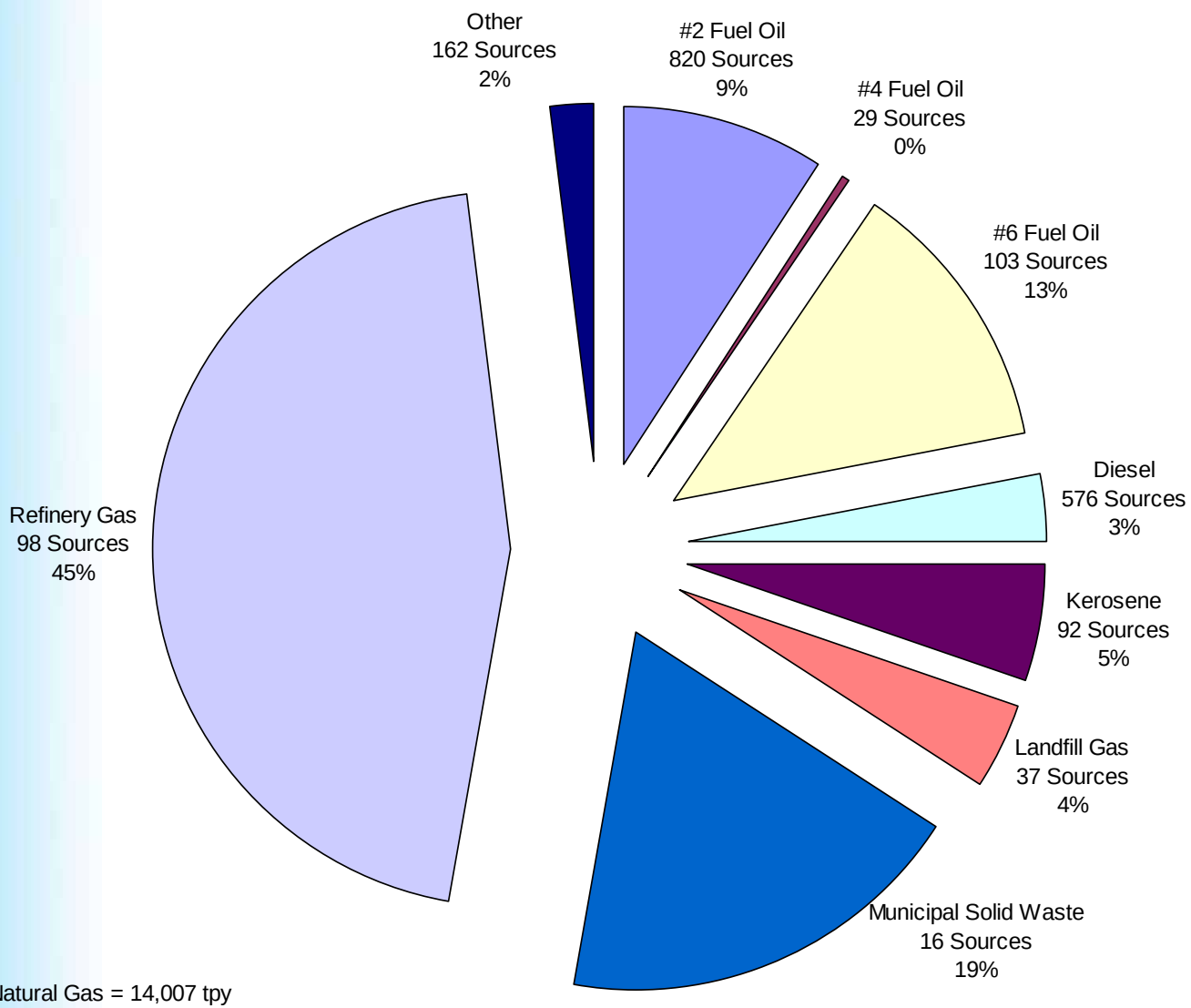
2002 SO2 Annual Point Source Emissions

Emissions from fuel combustion sources, except Coal



2002 NOx Annual Point Source Emissons

Emissions from fuel burners except Natural Gas and Coal



2896 Sources of Natural Gas = 14,007 tpy
10 Sources of Coal = 26,730 tpy

Potential Control Measures

- Water injection for simple cycle aero-derivative gas turbines
  - Primarily peaking units
    - Less efficient
    - Higher emissions per unit of electrical generation
  - 40% NO_x reduction possible with water injection
  - Potential for 40 tons per ozone season-day of NO_x reduction

Potential Control Measures

- Low Sulfur Oil
  - Adopt uniform statewide lower sulfur standard for fuel oil
  - Current sulfur content limit ranges
    - 0.2% to 0.3% for #2 fuel oil
    - 0.3% to 2.0% for # 6 fuel oil
  - #2 fuel oil is currently available with a 0.05% sulfur content
  - Potential SO_2 emissions reduction
    - #2 fuel oil: 75% or 253 tpy
    - #6 fuel oil: 85% or 829 tpy

Potential Control Measures

- Biodiesel
  - Blend of diesel fuel with fuel produced from soybean, other oilseed crops, and waste yellow and brown greases
  - Benefits include:
    - Reduced CO, SO_x, VOC, $PM_{2.5}$, and CO_2 emissions
    - Reduced health risk associated with diesel exhaust
    - Decreased dependence on petroleum imports
    - Potential new market for agricultural products such as soybeans and corn

Potential Control Measures

- Fuel Switching
  - From heavier # 6 fuel oil to lighter # 2 fuel oil
  - Potential for 64% reduction in both SO_2 and NO_x emissions
  - 1,245 tons of SO_2 reduction per year and 596 tons of NO_x reduction possible per year
  - Additional benefit of reducing direct PM emissions

Potential Control Measures

- Operational Flexibility
  - Provide increased operational flexibility to newer, lower emitting combustion units
  - Permit restrictions on fuel use: rolling average of 365 days vs. 12 months, vs. calendar year average
    - Presumptive norms

Other Control Measures

- Selective catalytic reduction
- Low NO_x burner
- Repowering/replacement for simple cycle turbine
- Wet electric static precipitator
- Eliminate “peak shaving” from emergency generator definition
- Scheduling of stack testing
  - Not on ozone action days
  - Only when source is firing the particular fuel

Other Control Measures

- Distributed generation
- Control refinery gas combustion
- Control municipal waste combustion
- Light oil emulsification
- SCONO$_x$
- XONON
- SNCR
- Restrict oil usage during ozone action days
- Additional retirement of NO$_x$ allowances

Additional Information Submitted

- Integrated Gasification Combined Cycle (IGCC) by NJBPU
- Hydrogen Economy by NJBPU
- Sewer Sludge Incinerators by Association of Environmental Authorities

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